TECHNICAL UNIVERSITY OF MOMBASA

UNIVERSITY EXAMINATION FOR:

BACHELOR OF COMMERCE (FOURTH YEAR)

BMS 4304: FINANCIAL FORECASTING AND MODELLING

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2016

TIME: 2 HOURS

DATE: 2016

Instructions to Candidates
You should have the following for this examination
-Answer Booklet, examination pass and student ID
This paper consists of FIVE questions. Question One is Compulsory. Answer any other two questions.
Do not write on the question paper.

Question ONE (Compulsory)

A summary of the financial statements of Mtwapa Co. Ltd for the year ended 31 December 20X2 is set out below:

SUMMARISED INCOME STATEMENT FOR THE YEAR TO 31 DECEMBER 20X2

	Sh.000
Revenue	3,744
Cost of Sales	2,280
Gross Profit	1,464
Operating expenses	780
Interest	72
Tax liability	200
Net profit	412
Dividends declared	163

SUMMARISED BALANCE SHEET AT 31 DECEMBER 20X2

	Sh.000
Non-current assets (net book value)	1,800
Current assets:	
Inventory	782
Account receivables	460
Cash and bank	164
	3,206
Current Liabilities:	
Trade payables	324
Other payables (including dividends)	163
Financing:	
Ordinary Share Capital (Ordinary shares of Sh.1.00)	1,200
Retained earnings to 31 December 20X1	550
Retained earnings for the year to 31 December 20X2	249
10% loan repayable 20X8	720
	3,206

You have identified the following information:

- **Expansion plans**

  The company plans to spend Sh.1.2 million on new modern production equipment. This will allow current capacity to be increased and there will be a consequent increase in the number of customers serviced.

  The business is therefore expected to grow at 20% for each of the next three years. This applies to revenue and cost of sales. Costs will be tightly controlled in this period and will only rise at 10% per annum.

- **Working Capital Control**

  The company prides itself on maintaining its control over its sales and purchases ledger. Consequently, even though there is a high growth anticipated, the company does not expect the average credit period given or taken to alter, i.e sales to receivables ratio and payables to cost of sales ratio will be maintained.

  The inventory levels are not anticipated to change, as a result of the modern production techniques that will be employed.

- **Depreciation**

  The new capital expenditure will be depreciated on a straight line basis over 10 years.

- **Taxation**
  The company pays tax at 28%. Capital allowances on the new equipment are available at 20% p.a. on a reducing balance basis. All of the existing capital has been written down to zero for tax purposes.

  Tax is paid in the same year in which it is charged.

- **Returns to investors**
  Dividends will grow each year in line with revenue i.e 20% per annum.

Required:

(a)   Using the information in the scenario:
   (i)   Prepare forecast income statements for the year 20X3, 20X4 and 20X5.

   (13 marks)
   (ii)   Prepare cashflow forecasts for the years 20X3, 20X4 and 20X5, and estimate the amount of funds which will need to be raised by the company to finance its expansion.

   (12 marks)

Notes:
   (1)   You should ignore interest or returns on surplus funds invested during the three-year period of review.
   (2)   This is not an investment appraisal exercise; you may ignore the timing of cash flows within each year and you should not discount the cash flows:
   (3)   Ignore inflation.

(b)   Plan a report to the directors of Mtwapa Ltd which:

   (i)   Discusses the key aspects and implications of the financial information you have obtained in your answer to part (a) of the question.   (2½ marks)

   (ii)   Recommends additional methods of financial forecasting which could be used with advantage by the company's management.
         You should assume that the only forecasts prepared by the company at present are similar to those you have prepared for your answer to part (a) of this question.

   (2½ marks)
   (Total = 30 marks)

Question TWO

(a)   Explain the conditions suited to the use of linear regression analysis.   (10 marks)

(b)   You are given the following data for output at a factory and costs of production over the past five months.

Month	Output 000 units	Costs Shs (million)
1	20	82
2	16	70
3	24	90
4	22	85
5	18	73

Required:

(i)   Calculate an equation to determine the expected cost level for any given output volume.
                                                                                          (5 marks)

(ii)   Forecast total costs if output is 22,000 units.   (5 marks)

                                                                          (Total = 20 marks)

Question THREE

Sales of article B ('000 units)

	Q1	Q2	Q3	Q4 (Q= quarter)
20X3	24.8	36.3	38.1	47.5
20X4	31.2	42.0	43.4	55.9
20X5	40.0	48.8	54.0	69.1
20X6	54.7	57.8	60.3	68.9

Required

(a)   Look at the data. What sort of trend and seasonal pattern do you expect to emerge from the analysis of this data?   (3 marks)

(b)   Derive a regression model from the data and forecast the trend in sales for the four quarters of 20X7.
                                                                                          (11 marks)

(c)   Discuss the major problems faced by managers when forecasting future activities in their companies.
                                                                                          (6 marks)

                                                                          (Total = 20 marks)

Question FOUR

Discuss how spreadsheet packages can be used to build business models to assist the forecasting and planning process and indicate their advantages and disadvantages.   (20 marks)

Question FIVE

A travel agency has kept records of the number of holidays booked and the number of complaints received from tourists over the past ten years.
The data is as follows:

Year	1	2	3	4	5	6	7	8	9	10
Number of holidays booked	246	192	221	385	416	279	343	582	610	674
Number of complaints received	94	80	106	183	225	162	191	252	291	310

The agency suspects there is a relationship between the number of bookings and the volume of complaints and wishes to have some method of estimating the number of complaints, given the volume of bookings.

Required:

(a)   Calculate the value of the regression coefficient, giving your answer to 3 decimal places.

(9 marks)

(b)   Develop a forecasting model to enable the agency to forecast the number of complaints.

(7 marks)

(c)   Using your answer in (b) above, forecast the likely number of complaints if 750 holidays are booked.

(4 marks)

(Total = 20 marks)